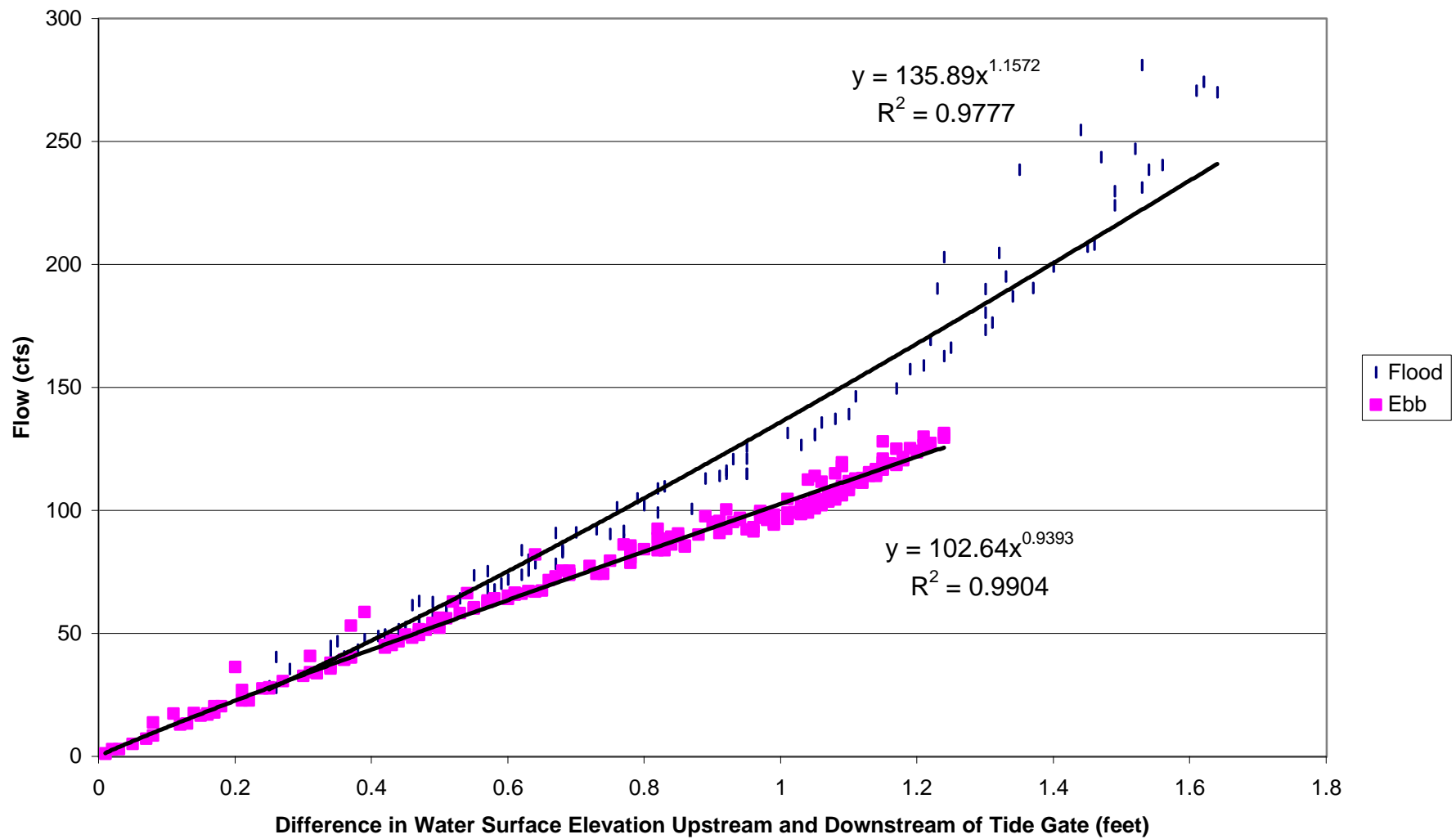
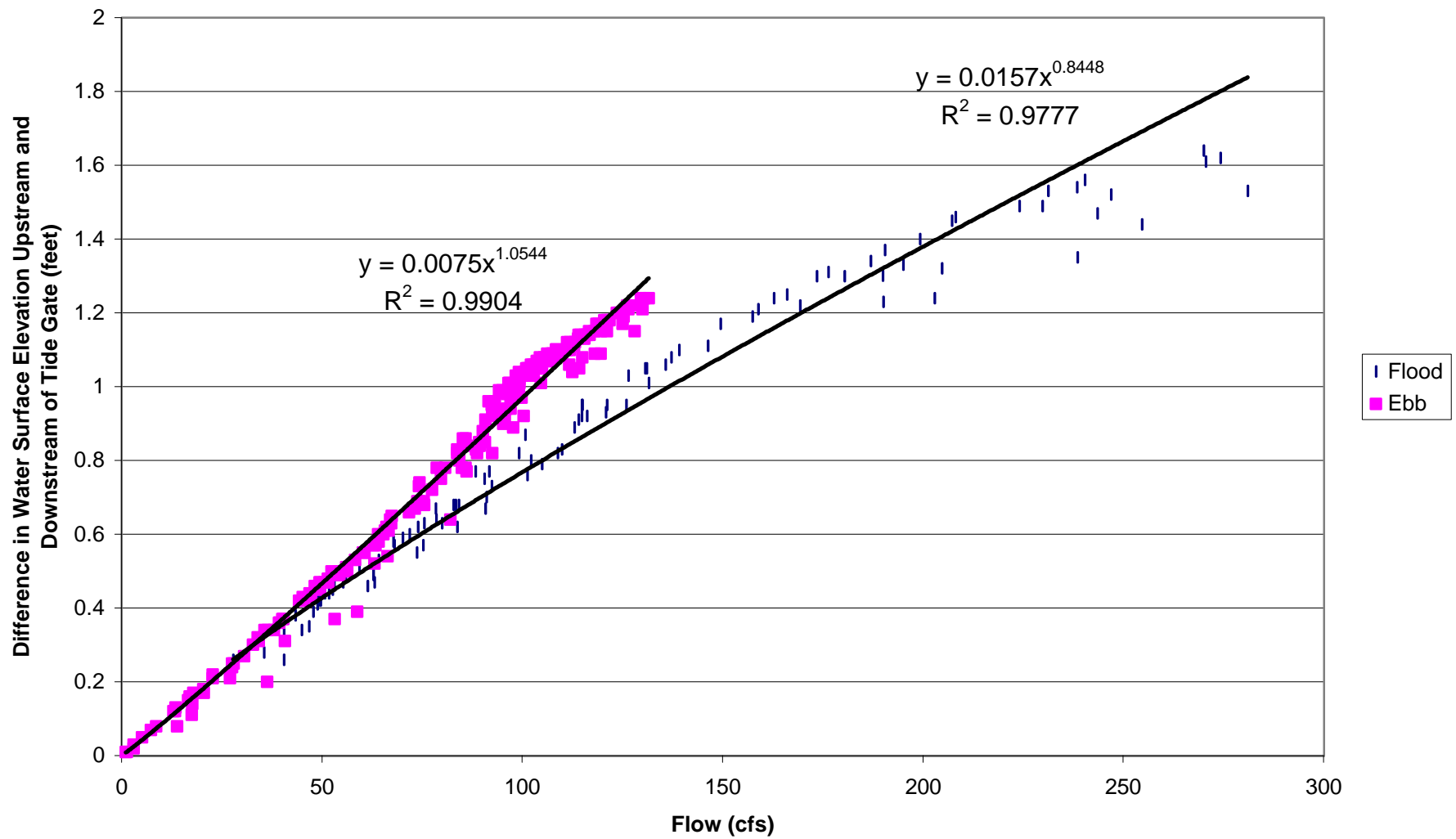


**Figure C-1. Rating Curves for One Open Tide Gate
(Flow vs. Difference in Water Surface Elevation)**



**Figure C-2. Rating Curves for One Open Tide Gate
(Difference in Water Surface Elevation vs. Flow)**



Appendix C-1

Estimation of Gate Coefficients for Tide Gates in Peyton Slough Marsh System

To model culverts or gates in RMA2, coefficients are needed to define the rating curve for each tide gate. The rating curve can be defined in either of two ways, as shown in Equations 1 and 2.

$$Q = A(\Delta H)^b \quad (1)$$

$$\Delta H = C(Q)^d \quad (2)$$

Where:

Q = Flow (cfs)

ΔH = Difference in water surface elevation upstream and downstream of the gate (feet)

A, b, C, d = Relational coefficients

To determine the coefficients in the rating curves, a HEC-RAS model of the Peyton Slough system was run with one fully open tide gate. HEC-RAS is a one-dimensional hydrodynamic model developed by the USACE. The difference in water surface elevations upstream and downstream of the culvert was used to estimate the head loss. A power function was fit to the plots of the corresponding flows and head differences during both flood or ebb tide. Figure C-1 shows the results for flow as a function of the head difference, and Figure C-2 shows the results for head difference as a function of flow. The coefficients determined from the power functions best fitting the data were used as initial estimates of the coefficients in the model.